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CW 13: Midpoint Part II

**Geometry**

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| Objective: Students will be able to find an endpoint of a segment, given one end point and the midpoint. | |
| 1. Point M is the midpoint of segment HG and is located at (-1,2). Point H is located at (-1,0) What are the coordinates of point G? | 1. Point X is the midpoint of segment TJ and is located at (5,2). Point T is located at (2,2) What are the coordinates of point J? |
| 1. Point B is the midpoint of segment AM and is located at (2,3). Point A is located at (-1,2). What are the coordinates of point M? | 1. Point F is the midpoint of segment QR and is located at (a,b). Point Q is located at (2,2). What are the coordinates of point R in terms of a and b? |
| Directions: Find the other end point of the line segment with the given endpoint and midpoint. | |
| 1. Endpoint: (-9,2), midpoint (-3,6) | 1. Endpoint: (3,-9), midpoint: (-2,8) |
| 1. Endpoint: (7,6), midpoint (-10,1) | 1. Endpoint: (-,3-8), midpoint: (9,9) |

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| Objective: Students find midpoints of segments and points that divide segments into 3, 4, or more proportional, equal parts. | |
| 1. Use a graph to answer the problem below: a. Find the midpoint of segment ST given S(-2,8) and T(10,-4). Label this point *M* and label the coordinates of point M.  b. What is the ratio of the length of SM to MT? | |
| 1. Find the point on the directed segment from to that divides it in the ratio of . | |
| 1. ../../../../Desktop/Screen%20Shot%202016-09-18%20at%2011.46.02%20AM.pn | 1. ../../../../Desktop/Screen%20Shot%202016-09-18%20at%2011.46.14%20AM.pn |
| 1. ../../../../Desktop/Screen%20Shot%202016-09-18%20at%2011.46.36%20AM.pn | 1. ../../../../Desktop/Screen%20Shot%202016-09-18%20at%2011.46.41%20AM.pn |
| 1. Given and point that lies on such that point lies of the length of from point along : a. Sketch the situation described. b. Is point closer to or closer to and how do you know? c. If the coordinates of point P are (0,0) and the coordinates of point R are (14,21), what are the coordinates of point Q? | |
| 1. Given and , if point lies of the way along , closer to than to , find the coordinates of . | |

Challenge Problems!

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| A robot is at position and is heading toward the point along a straight line at a constant speed. The robot will reach point in hours.   * 1. What is the location of the robot at the end of the third hour?   2. What is the location of the robot five minutes before it reaches point ?   3. If the robot keeps moving along the straight path at the same constant speed as it passes through point , what will be its location at the twelfth hour? |
| A robot begins its journey at the origin, point , and travels along a straight line path at a constant rate. Fifteen minutes into its journey the robot is at .   * 1. If the robot does not change speed or direction, where will it be hours into its journey (call this point )?   2. The robot continues past point for a certain period of time until it has traveled an additional of the distance it traveled in the first hours and stops.      1. How long did the robot’s entire journey take?      2. What is the robot’s final location?      3. What was the distance the robot traveled in the last leg of its journey? |
| Given with midpoint as shown, prove that the point on the directed segment from to that divides into a ratio of is the midpoint of . |